

20 YEARS HISTORY AND FUTURE PERSPECTIVE OF THE INTERNATIONAL CONFERENCE OF URBAN PESTS

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Abstract The International Conference of Urban Pests (ICUP) is a link between academic and industry researchers, regulatory officials, government agency leaders, manufacturer representatives and students and presents the latest results in research and development in the field of urban pest control for the past 20 years. The earlier conferences took place in different places all over the world and gave an excellent survey on the special topics of urban pest management on the different continents. About 500 full (complete) manuscripts and abstracts of about 320 poster presentations were published since 1993 in the proceedings and are available on the ICUP homepage. The importance of urban pest management will increase strongly in future. Urban areas are growing steadily. The modern architecture of carbon dioxide neutral buildings provides shelter to many organisms. The facades of these houses contain now are now covered with insulating material which offers many species excellent nesting sites, a fact that has become a strong challenge for the pest management. Expanding worldwide trade and tourism will further increase the introduction of alien organisms. The urban pest management must face these challenges and would benefit from the research and development of universities and scientific institutes, to protect our urban environment against pests. Already in the past the ICUP has been an important source for troubleshooting in urban pest management and even more so this is true for the future.

Key words Urban pest management, insulation materials, natural compounds, urban farming, exotic species

HISTORY

The International Conference on Urban Pests (ICUP) started more than 20 years ago with the first conference in Cambridge, UK in 1993. It was followed by Edinburgh, Scotland (1996), Prague, Czech Republic (1999), Charleston, USA (2002), Singapore (2005), Budapest, Hungary (2008) and Ouro Preto, Brazil (2011). With the meeting in Zurich 2014 we now look back on more than 20 years worldwide competence in urban pest control.

The first ICUP started with a lecture on ‘Trends in World Urbanization’, which is still relevant today (Watson, 1993). This presentation was followed by several future topics like “Urban entomology perspectives” (Robinson, 1993). Three years later, in Edinburgh, it was decided to include rodents and birds into the ICUP topics. The importance of various pests and pest management changed constantly in these two decades. Table 1 shows these changes by the subject matter of the presented papers and poster presentations. The number of contributions on conventional insecticides was on a constant high level over the past 20 years. Lectures on natural compounds and biological control were already present from 1993 to 1999 with 4 to 9 presentations per conference. The importance of these two topics declined in the following conferences but recovers in Zurich with 6 contributions. Heat treatment makes now a high percentage of alternative methods. Cockroaches were the most recognized pests over the first 12 years and declined slightly in the following conferences. Ants started to be more important

from 2002 on, and flies remained on a low level over the 20 years. Medical entomology has a large share of the conference from the beginning in 1993. Mosquitoes have a high percentage in this session since 1993 followed by ticks. Fleas were only represented with 1 to 3 contributions in the first 4 conferences. Bed bugs were not a big concern in the ICUP until 2005 but started to be a major topic in Budapest 2008 with eight presentations and a well frequented workshop and with 12 presentations in 2011(Ouro Preto). Bed bugs are again represented in the current conference with 10 contributions. Exotic species are in the focus since 2008 and are now present with 12 contributions on mosquitoes, ants, bugs and beetles. Wood protection is dominated by lectures on termites which have a high proportion on the total number of contributions particularly in Charleston, Singapore and Ouro Preto.

Table 1. Topics of oral and poster presentations at the meeting of the International Conference on Urban Pests from 1993 to 2014 (Contributions which refer to different topics, are mentioned in each one.)

	Edinburgh		Charleston		Budapest		Zurich	
	Cambridge	Prague	Singapore	Singapore	Ouro Preto	Ouro Preto	2014	
Year	1993	1996	1999	2002	2005	2008	2011	2014
Oral presentations	67	84	81	50	76	68	73	64
Poster presentations	32	38	69	52	45	27	61	29
Topics								
Urban Entomology – Trends and perspectives	11	7	9	2	0	3	3	1
Conventional Insecticides	22	26	15	28	25	22	24	17
Natural compounds + biological control	7	9	4	0	5	3	2	6
New formulation- + application techniques	5	2	1	1	1	0	4	2
Alternative methods	5	7	3	3	5	1	5	10
Biocidal directives and Legislation	1	3	1	0	7	1	5	2
Pest Management	2	6	8	6	3	11	4	4
Cockroaches	26	27	30	13	21	10	12	11
ants	4	5	8	15	16	11	19	11
flies	5	2	9	8	3	4	2	4
Medical Entomology	25	34	48	17	31	37	40	32
(Mosquitoes)*	(9)	(19)	(17)	(4)	(19)	(18)	(18)	(17)
(Bedbugs)*	(0)	(0)	(0)	(0)	(0)	(8)	(12)	(10)
Exotic pests	0	0	0	1	0	5	8	12
Wood protection	16	10	20	28	31	10	20	6
(Termites)*	(6)	(8)	(19)	(27)	(30)	(10)	(16)	(2)
Vertebrates	0	6	6	5	6	3	12	8
Others	13	14	6	10	4	7	11	9

*Numbers in brackets are also included in “Medical Entomology” and “Wood protection”, resp.

FUTURE URBAN PEST MANAGEMENT

As a main topic for the next twenty years the ICUP has to present a worldwide picture of the future needs and trends in pest management. To achieve this we need leaders in the different scientific fields and governments who are prepared to attend this conference and to present their knowledge. For the last 20 years ago pest management has been seen as a national task by most nations, but now it has become a worldwide concern. Bed bugs and invasive species such as ants have demonstrated that understanding their behavior and control is only possible when thinking globally (Klotz et al., 2008).

INTRODUCTION OF ‘ALIENS’ – A GROWING CHALLENGE FOR PEST MANAGEMENT

The development of new and effective pest management strategies has become a global challenge. Global trade and tourism allow organisms from tropical areas to travel undetected within a few days around the world. Global warming is an important prerequisite for these species to establish themselves even in temperate zones of the northern or southern hemisphere, where in the past the low temperatures did not allow survival outside of buildings (Rabitsch and Essl, 2010; Nentwig, 2011).

Most alien arthropods have a different biology and behavior than native species and require special control strategies. Descriptions of economically important species are in reference texts in their countries of origin or in the Brazilian, American, Australian, and Japanese literature (Zorzenon and Junior, 2006; Yasutomi and Umeya, 1995; Gerozisis et al., 2008; Robinson, 2005). Pest management requires knowledge of pest control strategies and the study of global pest control literature. Some control advice may also be found in the global net (Pospischil, 2011).

CONSEQUENCES OF MODERN LIFESTYLE FOR PEST MANAGEMENT

The environment is driven by ongoing changes. People's expectation of better housing, health care, vector control, and their tolerance of pest control measures has changed, particularly in urban areas. In many places, people refuse treatment with synthetic insecticides or insist on doing the control themselves (Lüscher et al., 2008; Lüscher et al. 2014). In these situations, alternatives to synthetic insecticides should be provided wherever possible. Some natural compounds are well known and have been in use for a long time, including pyrethrum, an extract from *Tanacetum* spp. (Asteraceae) and different extracts of the neem tree (*Azadirachta indica*), which contains more than 100 active compounds like nimbidin, azadirachtin, salannin and others (Casida and Quistad, 1995; Mehlhorn et al., 2011; Hinson et al., 2014). Institutes and industry has dedicated personnel and resources in the research and development of natural compounds. Natural compounds have to be treated as other active ingredients of insecticides, and be tested for toxicological hazards and allergic reactions.

Typical integrated pest management measures, such as guidance of clients, monitoring and preventive measures against pest infestation are now the main tasks of a pest control professional. These measures require a thorough education including identification of pests. Modern control strategies with baits require a thorough knowledge of the biology and behavior of pests with special regard to new invaders (Zungoli et al., 2014). Recently introduced alien species are often well known in their country of origin and specific information of their control is available. It is an objective of the ICUP to make this information accessible worldwide.

IMPACT OF MODERN BUILDINGS TO PESTS

In temperate zones modern buildings are often provided with an outer insulation to reduce heat loss. Modern insulation with polystyrene and other foam materials with high insulating properties are

excellent habitats for pests, such as ants, wasps, woodlice, beetles, mice, rats, and birds (including woodpeckers, starlings and parakeets). The age of the insulation layer plays no role in the attack. Other insulation materials, such as cellulose and mineral wool are less suitable as nesting sites. In individual cases, sheep's wool is used as natural resource for insulation (Zack et al., 2012). However, this natural insulation material is vulnerable to clothing moths (*Tineola* spp.) and carpet beetles (Dermestidae). Effective procedures are urgently needed to protect these insulations. Unfortunately, there is only very little knowledge that is based on sound research. Meanwhile, it is accepted that many animals like to use new, convenient options in their environment to build their nests (Pospischil and Pospischil, 2014). Urban farming started some years ago in several cities like, Singapore, New York, and Berlin (Yuen and Wong, 2005; Wong et al., 2003). It is a strategy to produce food in direct neighborhood of people on roof-tops in larger towns and starts now to enter economic level. It may be an important tool to provide people in mega cities with fresh food. However, monitoring strategies have to be established before pests become a hazard for urban farming (Pospischil, 2012). The pest control business has to consider these changing conditions and establish a training of the pest management professionals to provide them with the right answers to the new situation in pest control.

CONCLUSIONS

For the last twenty years the ICUP has been a unique conference by providing a forum for discussion of the different aspects of urban pest management, including insects, vertebrates, mites and spiders, new control strategies, and regulatory affairs. The Conference has served the need for information and recommendations from worldwide researcher on ways to overcome the challenges of pests arising from our lifestyle and environment. For scientists, industry researchers, regulatory officials, government agency leaders, and pest management professionals not able to attend the Conference there is the bound Proceedings. This book is provided to participants at the start of the Conference and is available to those not able to attend; alternatively there is a compact disk version of the complete Proceedings. A world without pests is unattainable – therefore pest management will be an even more important task in future. The future preoccupation with urban pests means to learn from invasive pests, from the environment and from nature.

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